

A NEW SPECIES OF FOSSIL KELLETIA (MOLLUSCA:
GASTROPODA) FROM THE LOMITA MARL,
LATE CENOZOIC OF SAN PEDRO, CALIFORNIA

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ABSTRACT: *Kelletia kanakoffi*, a new species of gastropod belonging to the family Neptuneidae, is described from strata of Late Pliocene or Early Pleistocene age in San Pedro, California.

INTRODUCTION

Numerous species of fossil mollusks have been reported from Hilltop Quarry and nearby localities (see Hanna, 1923; Schenck, 1945: 513-514; Woodring *et al.*, 1946: 49-52; Valentine, 1961: 411-413) in San Pedro, Los Angeles County, California. Intensive collecting in this area by George P. Kanakoff and his associates has yielded many interesting fossils now preserved in the Los Angeles County Museum of Natural History.

Recently Mr. Kanakoff sent the author two specimens of a large gastropod, referable to the genus *Kelletia*. Study of these fossils revealed that they represent an undescribed species here described as new.

The strata in which they were found have been considered to be of Late Pliocene age by some authors but as Early Pleistocene age by others. An age of three million years given by Obradovich (1965), based upon Potassium-Argon dating of glauconite, represents the most recent maximum age attributed to these sediments. This date would certainly place the Lomita Marl, a member of the lower San Pedro formation, in the Late Pliocene or very Early Pleistocene. Several species of mollusks reported from the Lomita Marl occur elsewhere only in strata believed by some authors to be of Pliocene age.

ACKNOWLEDGMENTS

I am grateful to Mr. George P. Kanakoff, Curator Emeritus of the Section of Invertebrate Paleontology, Los Angeles County Museum of Natural History, who lent the specimens of the new species described herein for study and description. Acknowledgment also is due Victor Zullo, Allyn G. Smith and Barry Roth, California Academy of Sciences, whose advice and criticism was particularly helpful during the preparation of the manuscript. Alan J. Galloway of the same institution, and Warren O. Addicott, United States Geological Survey, called my attention to certain literature concerning the geochronology of the Lomita Marl. The illustrations in the text are from photographs made by Maurice Giles, Staff Photographer, California Academy of Sciences.

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CLASS GASTROPODA

Family Neptuneidae Tryon

Genus *Kelletia* Bayle, in Fischer

Kelletia Bayle, in Fischer, 1884: 625. Sole species, "*S. Kelleti*, Forbes." Wenz, 1938 (reprint, 1962): 1166

Type species: *Siphonalia kelleti* Forbes [= *Fusus kelletii* Forbes (1852: 274, pl. 9, fig. 10)] "taken on the Californian coast."

This genus (and its type species) was named for Captain Kellett of the British Royal Navy. Some authors have used the orthography *Kellettia* but most recent authors have followed the original spelling given by Bayle for the genus and *kelletii* for the species as given by Forbes.

West American authors have placed *Kelletia* in either the family Neptuneidae or the Buccinidae. Powell (1929: 63) stated that the shell characters as well as the radula of this genus are very similar to *Austrosipho* Cossmann, and these genera he placed in the family Buccinulidae Finlay. Wenz (1962: 1151) placed both that family and the Neptuneidae as subfamilies under the Buccinidae. He considered *Austrosipho* Cossmann, 1906, and *Verconella* Iredale, 1914, to be synonyms of *Penion* Fischer, 1884.

Ruth (1942), in a monograph of *Siphonalia* in the Cenozoic of western North America, considered *Kelletia* a subgenus which included four species that he described and illustrated. The geologic range of the subgenus indicated by the included species was from Paleocene (Martinez) to Recent. Subsequent to Ruth's paper, one species, *Kelletia vladimiri* Kanakoff, was described from strata of Pliocene age in southern California. One species of *Kelletia* now lives in the region between Santa Barbara, California, and San Quintín, Baja California, from the intertidal zone to a depth of about 64 meters (35 fathoms). Another species, *Kelletia lischkei* Kuroda, lives in Japanese waters where it has been reported to range from 32° to 39° North Latitude on the Pacific coast and to 40° North on the Japan Sea coast.

In their catalogue of the Tertiary mollusks of Japan, 1952, Hatai and Nisiyama did not allocate any species to *Kelletia* but species assigned to *Kelletia* (considered to be a subgenus of *Siphonalia*) have been reported by others from strata of Late Tertiary age in Indonesia and in India.

Two species of Pliocene age from Ecuador, tentatively assigned to *Kelletia* by Olsson (1964: *K. ecuadoriana*, p. 165, pl. 24, figs. 2-2c and *K. rugosa*, p. 165, pl. 24, figs. 1, 1a), do not closely resemble species of that genus described from California.

Anderson (1964: 249) recently proposed a subgenus *Boreokelletia*, based upon *Kelletia* (*Boreokelletia*) *hosiusi* (Beyrich, 1856), from strata of Miocene age in Germany. The type species earlier was referred to the genus *Streptochetus* Cossmann, 1889, by Kautsky (1925: 117), and others.

***Kelletia kanakoffi*, new species**

Figures 1, 2, and 3

Diagnosis: A new species of *Kelletia* which differs from other west American species of this genus in its large size, thick shell, coarse spiral sculpture and large umbilicus.

Description: Shell large, thick, fusiform, the spire elevated; whorls of spire five (the apex lacking), angulated near the middle, posteriorly slightly concave and extending over a little more than one half of the preceding whorl, the suture appressed; axial sculpture consisting of well developed, axially elongated nodes, seven on the uppermost, eight on the succeeding one, ten on the penultimate whorl and eight on the body whorl, followed by a low, carinate ridge at an angulation posterior to the middle, with vague vertical ridges outlined by lines of growth; the entire shell is sculptured with spiral ridges separated by deep grooves, about twenty on the penultimate whorl and about twenty-three on the body whorl, the anterior ones much coarser than the posterior ones; some ridges bear one to three spiral grooves and where eroded these separate small riblets; aperture ovate, outer lip not thickened, the interior lightly lirate corresponding to the exterior sculpture, pillar smooth, twisted, inner lip smooth; canal well developed, narrow, twisted and recurved, a large siphonal fasciole present, in front of which is a large, rather wide umbilicus.

Dimensions: The holotype, length (apex lacking), 181 mm, maximum diameter, 90 mm, length of aperture and canal, 102 mm; paratype, length, 178 mm, maximum diameter, 91 mm, length of aperture and canal, 104 mm.

Type locality: Loc. 435 LACMIP, Lomita Marl about 50 feet below the crossing of West Park Drive, Host Place and Coralmount Drive, San Pedro, California. Late Pliocene or Early Pleistocene. John Sutherland collector, July, 1966.

Type specimens: Holotype Catalog Number 2456, and Paratype Catalogue Number 2457, Los Angeles County Museum of Natural History, Invertebrate Paleontology Collection.

Comments: This new species differs from the Recent *Kelletia kelletii* (Forbes, 1852: 274, pl. 9, fig. 10) in the larger size, coarser sculpture, very large umbilicus, the more angulated shoulder and slightly carinate body whorl, and in that the whorls on the spire overlap the preceding ones to a less extent posteriorly than do those of the well known living species (see Arnold, 1903: pl. 4, fig. 5; Ruth, 1942: pl. 48, fig. 5; Abbott: 1954, pl. 24, fig. W).

A large specimen of *Kelletia kelletii* 161 mm long and 76 mm in maximum diameter, in the collections of the California Academy of Sciences, from Locality 31642 (CAS), from 3.7 miles off Huntington Beach, California, in 37 to 38 meters (20 to 21 fathoms), has only a short, narrow, shallow, umbilical groove in comparison to the large umbilicus of *K. kanakoffi*, new species. The largest specimen of *K. kelletii* reported in the literature (Anon., 1959:

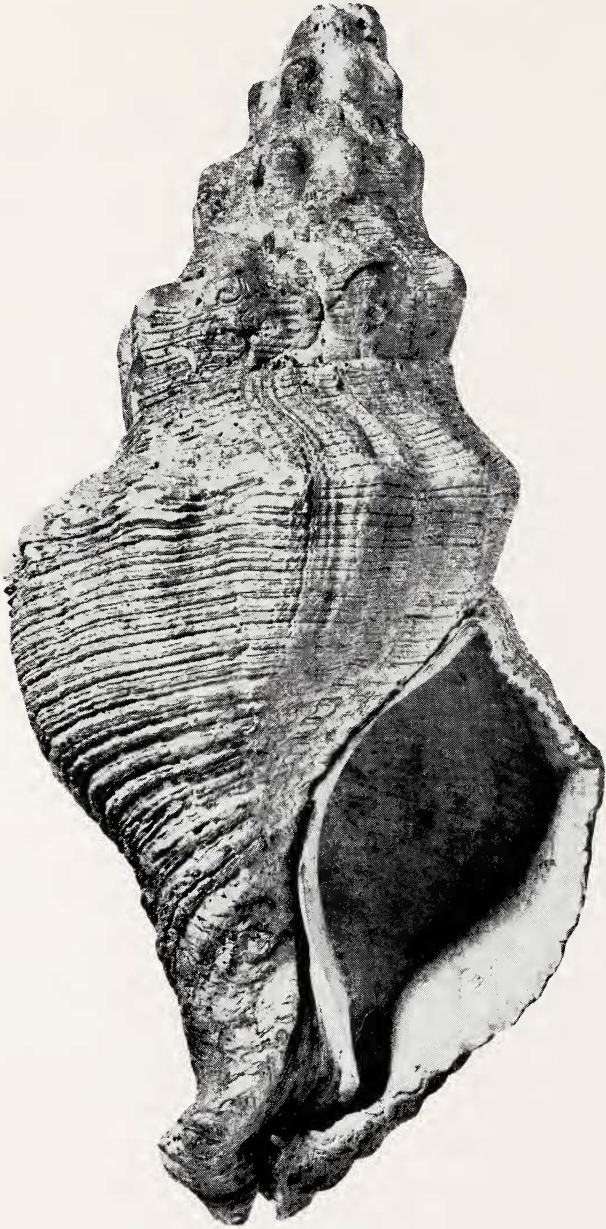


Figure 1. *Kelletia kanakoffi*, new species. Holotype, LACMIP 2456, from Lomita Marl, San Pedro, California; Late Pliocene or Early Pleistocene age. Approximately X 5/6; true length (apex lacking), 181 mm, maximum diameter, 90 mm.



Figure 2. *Kelletia kanakoffi*, new species. Dorsal view of holotype shown in figure 1.

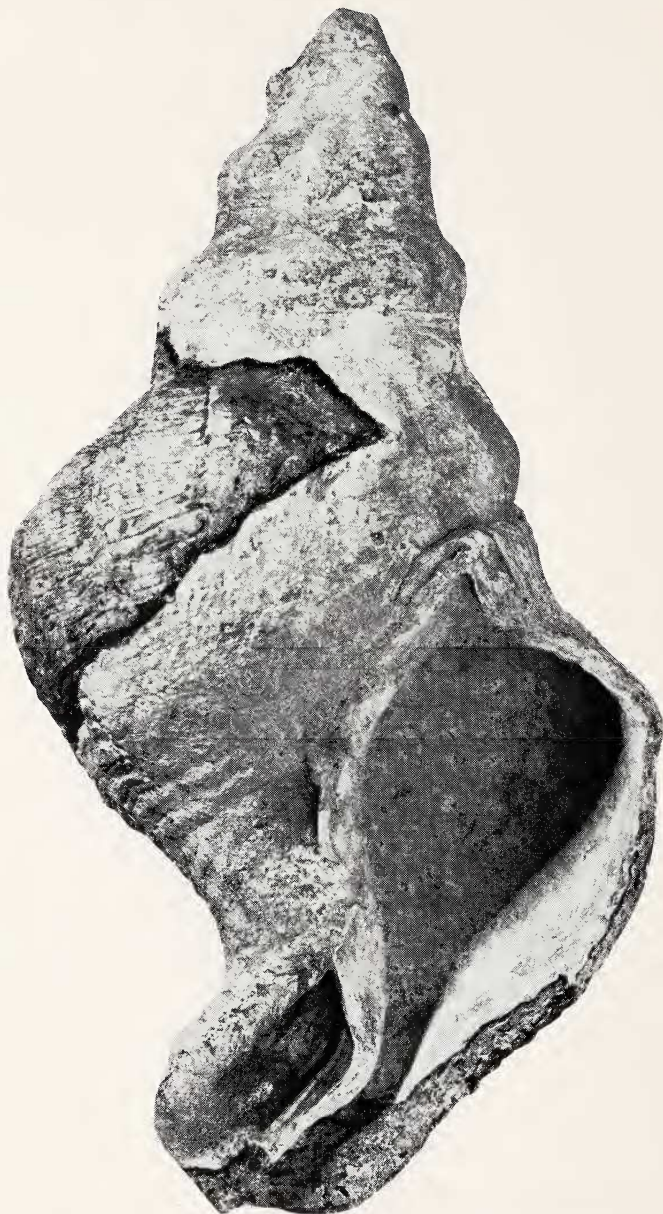


Figure 3. *Kelletia kanakoffi*, new species. Paratype, LACMIP 2457, from the same locality as the holotype shown in figure 1. Approximately X 5/6; true length, 178 mm, maximum diameter, 91 mm. Note the large umbilicus on this specimen.

19), from southern California, is 170 mm long and 87 mm in maximum diameter.

The same shell characters which serve to separate *Kellettia kanakoffi*, new species, from *K. kelletii* also differentiate it from *Kellettia vladimiri* Kanakoff (1954: 114, pls. 29, 30, 31), a smaller, more slender form described from the Pico formation, of Pliocene age, in Los Angeles County, California.

This species is named for Mr. George P. Kanakoff, Curator Emeritus, Los Angeles County Museum of Natural History, whose careful collecting has brought to light many interesting specimens.

LITERATURE CITED

- ANONYMOUS 1959. "Lost Operculum Club." Min. Conch. Club South. California (J. Q. Burch, Editor), No. 190: 17-23, July-August.
- ABBOTT, R. T. 1954. American Seashells. (D. Van Nostrand Co., New York), pp. I-XIV, 1-541, pls. 1-40, figs. 1-100 in text.
- ANDERSON, H. J. 1964. Faunen aus dem Miocän Nordwestdeutschlands. Die Miocäne Reinbek-Stufe in Nord- und Westdeutschland und ihre Mollusken-Fauna. Fortschritte in der Geologie von Rheinland und Westfalen. Geologisches Landesamt Nordrhein-Westfalen, 14: 31-368, pls. 1-52, figs. 1-18 in text.
- ARNOLD, R. 1903. The Paleontology and Stratigraphy of the Marine Pliocene and Pleistocene of San Pedro, California. Mem. Calif. Acad. Sci., 3: 1-420, pls. 1-37, June 27.
- FISCHER, P. 1884. Manuel de Conchyliologie et de Paléontologie Conchyliologique ou Histoire Naturelle des Mollusques Vivants et Fossiles. (Librairie F. Savy, Paris), Fasc. 7: 609-688, figs. 370-456 in text, June 30.
- FORBES, E. 1852. On the marine mollusca discovered during the voyages of the Herald and Pandora, by Capt. Kellett, R. N., and Lieut Wood, R. N. Proc. Zool. Soc. London for 1850: 270-274, pls. 9, 11, January 24.
- HANNA, G. D. 1923. Results of preliminary examination of seven samples of sediments from near Lomita. Bull. South. Calif. Acad. Sci., 22 (2): 64-65, July. ("List of the fossil mollusks found in the Lomita beds, as identified by Mrs. Ida S. Oldryod. . .", p. 65).
- HATAI, K., AND S. NISIYAMA, 1952. Checklist of Japanese Tertiary marine mollusca. Sci. Repts. Tōhoku Univ., Sendai, Japan, Second Ser. (Geology), Special vol. 3: 1-449; supplement, pp. 452-464.
- KANAKOFF, G. P. 1954. A new *Kellettia* from the Pliocene of California. Bull. South. Calif. Acad. Sci., 53 (2): 114-117, pls. 29, 30, 31, May-August (issued August 1).
- KAUTSKY, F. 1925. Das Miocän von Hemmoor und Basbeck-Osten. Abh. d. Preuss. Geol. Landesanstalt, Neue Folge, Heft 97, pp. 1-255, pls. 1-12.

- OBRADOVICH, J. D. 1965. The Potential use of Glauconite for Late-Cenozoic Geochronology. International Association for Quaternary Research, 7th Congress (United States), Proc., 8: 267-279.
- OLSSON, A. A. 1964. Neogene Mollusks from Northwestern Ecuador. Paleo. Research Inst., Ithaca, New York, pp. 1-256, pls. 1-38, October 28.
- POWELL, A. W. B. 1929. The Recent and Tertiary species of the genus *Buccinulum* in New Zealand, with a review of related genera and families. Trans. and Proc. New Zealand Inst., 60 (Quarterly issue), Pt. 1: 57-101, pls. 1-4, figs. 83-132 in text, May 31.
- RUTH, J. W. 1942. The molluscan genus *Siphonalia* of the Pacific coast Tertiary. Univ. Calif. Publ. Bull. Depart. Geol. Sci., 26(3): 287-306, pls. 47, 48, March 24.
- SCHENCK, H. G. 1945. Geologic Application of Biometrical Analysis of Molluscan Assemblages. Jour. Paleo., 19(5): 504-521, pls. 66, 67, September.
- VALENTINE, J. W. 1961. Paleocologic Molluscan Geography of the Californian Pleistocene. Univ. Calif. Publ. Geol. Sci., 34(7): 309-442, figs. 1-16 in text, May 17. (See especially pp. 411-413).
- WENZ, W. 1938 (1962). Handbuch der Paläozoologie herausgegeben von O. H. Schindewolf. Gastropoda von W. Wenz. (Gebrüder Borntraeger: Berlin. Fotomechanischer Nachdruck, 1962), Bd. 6, Teil 1, Gastropoda, Teil 1, Lieferung 5: 961-1200, Abbildungen 2788-3416.
- WOODRING, W. P., M. N. BRAMLETTE, AND W. S. W. KEW. 1946. Geology and Paleontology of Palos Verdes Hills, California. U.S. Geol. Surv., Prof. Paper 207: I-V, 1-145, pls. 1-37, figs. 1-16 in text. (See especially "Hilltop quarry and nearby localities," pp. 49-52).

Accepted for publication March 16, 1970